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## NOTE ON A MINNESOTA SPECIES OF ISARIA AND AN ATTENDANT PACHYBASIUM.

By CONWAY MAC MILLAN.

Early in April Mr. E. P. Sheldon found on the river bank below St. Anthony's Falls, Minn., a pupa of *Orgyia leucostigma*, commonly known as the Tussock moth, which was covered with a growth of *Isaria*. The fungus does not correspond to any described species in all its characteristics, though I have determined it provisionally as *Isaria sphingum*, Schw., which is the conidial form of *Cordyceps sphingum*, (Tul.). The description of the Minnesota form is appended :

Stromata gregarious;  $1\frac{1}{2}$  to 3 centimeters high,  $\frac{1}{2}$  millimeter thick, and slightly subclavate, arising from a pulverulent-granulose, yellowish mycelium, conidial area but slightly thickened, hyphæ  $4\mu$  in thickness, indistinctly yellowish, conidia very minute, ovoid,  $1\frac{1}{2}$ -2 by  $\frac{1}{2}$ - $1\frac{1}{2}\mu$ ; hyaline, deciduous.

This does not coincide exactly with the description of *Isaria sphingum*, Schw., given in Saccardo's *Sylloge Fungorum*, but in the genus *Isaria*, and throughout many of its allies exact descriptions are not attainable, owing to the failure of the older mycologists to measure hyphæ and spores as well as stromata and conidial areas.

An effort to cultivate this species of *Isaria* was made.

Portions of conidial areas were removed with sterilized forceps, and were then placed, with every precaution, in gelatine culture tubes. Some of those, prepared by Dr. George Grübler, of Leipsig, happened to be at hand and were chosen for three cultures. Repeated experiments showed that, together with adventitious forms—*Macrosporium* in one case and *Piptocephalis* in another—a very peculiar plant, clearly of the genus *Pachybasium*, Sacc.—was constantly developed in the gelatine tubes. This *Pachybasium*, distinguished by its bottle-shaped (*ampulliform*) basidia, whorled along the fertile hyphæ, as in *Verticillium*, Nees., is possibly *P. hamatum*, (Bon.) Sacc., described in the *Sylloge Fungorum* Vol. IV, pp. 149, 150. Since, however, the Saccardian description lacks measurements, a description is appended.

Forming minute yellowish patches on gelatine, becoming grayish or greenish-white, fertile hyphæ  $3\frac{1}{2}$ -4  $\mu$ . in thickness, 40-90  $\mu$ . in length; ascending with whorls of basidia, either directly attached or with secondary branches interpolated; basidia shortly ampulliform, necks constricted, conidia ovoid  $1\frac{1}{2}$ -2 by  $\frac{1}{2}$ - $1\frac{1}{2}\mu$ ., clinging persistently to the basidia.

It will be seen that measurements of the spores and hyphæ of this *Pachybasium* correspond exactly with those given above for the *Isaria*, and this fact, together with the appearance of the former so uniformly in connection with the latter, might tend to give the impression that the two genera are pleomorphic and that in *Pachybasium* we have another step in the life history of *Cordyceps*. It is well known that

*Isaria* gives rise to peculiar forms in gelatine cultures; for example, according to Alfred Giard, reported in the JOURNAL OF MYCOLOGY, Vol. V., p. 174, *Isaria destructor* assumes the form of *Coremium*. *Coremium* is, however, a genus of *Stilbeæ* very close to *Isaria*, while *Pachybasium* is in the *Mucedineæ*. By the plate-culture methods it is hoped that absolutely pure cultures of the *Isaria* may be obtained, and if there is this genetic connection between *Pachybasium* and *Isaria* it may then become capable of demonstration. The preceding note is intended simply to direct attention to the fact that *Pachybasium* has been distinguished in American habitat, and that it may be looked for in connection with *Isaria sphingum*, Schw. on gelatine cultures of the latter form.

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#### A FEW NEW FUNGI.

BY J. B. ELLIS AND S. M. TRACY.

**PHYLLACHORA STENOSTOMA**, *n. s.* On leaf of *Panicum brizanthemum* from Africa. Com. Prof. S. M. Tracy. No. 501. Stromata innate, only slightly prominent, black, rather indefinitely limited, subelongated, 1-2 millimeters long, punctate from the slightly prominent hysteriiform ostiola. Ascigerous cavities small, subglobose, numerous. Asci subfasciculate, sessile, oblong cylindrical, 40-45 by 7-8 $\mu$ . Sporidia biseriate, oblong, 1-septate and slightly constricted at the septum, yellow-brown, 12-15 by 3-3½ $\mu$ . Bears a general resemblance to *P. graminis*, but less prominent, sporidia different besides in the narrowly compressed ostium which resembles a minute *Hysterium*.

**FUSARIUM CELTIDIS**, *n. s.* On fruit of *Celtis occidentalis*, Starkville, Miss., May, 1890, Tracy, 1333. Sporodochia scattered, erumpent, pulvinate, pale orange, ¼-1 millimeter in diameter. Basidia subfasciculate, branched above, branches erect, 40-60 by 4 $\mu$ , septate. Conidia fusoid, nearly straight, only the obtusely pointed ends slightly curved, 5 septate, 40-60 by 4-5 $\mu$ .

**CLADOSPORIUM VELUTINUM**, *n. s.* On *Phalaris Canariensis*, Starkville, Miss., March, 1890. Forming velutinous, olive-brown patches ½-1 centimeter long, or by confluence longer, slightly thickening and distorting the leaf; hyphæ erect, simple, septate, subundulate, pale brown, 50-75 by 4-5 $\mu$ ; conidia terminal, 8-20 by 4-5 $\mu$ , 1-3-septate, subhyaline, the shorter ones elliptical, the longer ones oblong or cylindrical.

**PUCCINIA APOCRIPTA**, *n. s.* On *Asprella Hystrix*, Cañon City, Colo., Tracy, August, 1887. Hypophyllous, sori oval or oblong, occupying the entire under surface of the lower leaves and remaining covered indefinitely by the epidermis; uredospores oval, epispore thin, minutely